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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/570,235	02/28/2006	Kai Eck	DE030317US1	2502
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EXAMINER				
MEHTA, PARIKHA SOLANKI				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/570,235

Applicant(s)

ECK ET AL.

Examiner

PARIKHA S. MEHTA

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/5508)
- Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because submission of the entire cover page of the PCT to which the present application claims priority does not constitute a proper abstract. Correction is required. See MPEP § 608.01(b).
2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Device and Method for Combined Ultrasound and X-Ray Visualization of Blood Vessels.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the sensor of claim 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. The drawings are further objected to because the boxes depicting elements 7 and 9 are not adequately labeled; element numbers alone do not constitute sufficient labeling of the elements.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claims 1-9 and 12 are objected to because of the following informalities:

In step a) of claim 1, "for storing" should be replaced with --configured to store--.

In step b) of claim 1, "for displaying" should be replaced with --configured to display--.

In step c) of claim 1, it is unclear what is being set forth by "a current location in the vessel".

In claims 3-7, "comprising" should be preceded by --further--.

In claims 4 and 5, "for generating" should be replaced with --configured to generate--.

In claim 6, "for injection" should be replaced with --configured to inject--.

In claim 12, it is unclear how the sensor recited therein relates to the structure set forth in the parent claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-6 and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Prause et al (US Patent No. 6,148,095), hereinafter Prause ('095), of record.

Regarding claims 1, 4, 5 and 10, Prause ('095) discloses a method and system of visualizing blood vessels, the system including an IVUS probe 220, an X-ray device 210, a memory 224 for storing IVUS images indexed by their respective locations of their recording in the vessel, a display unit 240 for displaying images of the vessel, and a processor 230 programmed to select an ultrasound image corresponding to a current location in the vessel and display the ultrasound image on the display concurrently with an X-ray image of the vessel (col. 4 lines 8-43).

Regarding claims 2, 3 and 11, Prause ('095) discloses that the processor is programmed to receive a data input for a current value of the patient's cardiac phase or breathing cycle ("a parameter that characterizes a cyclic intrinsic movement of the vessel), wherein the ultrasound images are indexed by the respective values of the cardiac phase at the time of recording, and wherein the selected ultrasound image

corresponds to the current value of the cardiac phase (col. 6 lines 24-33). Examiner notes that, by ECG-gating the image acquisition to periods wherein cardiac motion is minimal, Prause ('095) "indexes" the images by cardiac phase – that is, all images are characterized (i.e. "indexed") by a cardiac phase of minimal motion.

Regarding claim 6, Prause ('095) discloses a device for injecting contrast agent into the vessel (col. 7 lines 12-13).

Regarding claim 8, Prause ('095) discloses the processor as programmed to determine a current location from the position of an object of interest in a current image (col. 5 lines 45-56).

Regarding claim 9, Prause ('095) discloses that the processor is programmed to record X-ray images of the same locations imaged by the ultrasound probe (col. 6 line 67 – col. 7 line 8), and therefore the reference processor is programmed to show within the X-ray image the location of recording of the ultrasound image, as the two datasets are spatially correlated.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prause ('095). Prause ('095) teaches an additional memory in which angiograms of the vessel are stored, but does not expressly teach the angiograms as being indexed to the parameter. However, it would have been obvious to one of ordinary skill in the art to index the angiograms in the same manner in which the ultrasound images are

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indexed by Prause ('095), as it would not otherwise be possible to register the ultrasound images with the angiograms to create a useful image; that is, a skilled artisan would readily recognize that both image sets should be gated/indexed in the same way, in order to produce a fused image that accurately depicts both angiographic and ultrasonic information from the vessel at the same cardiac phase.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Prause ('095) in view of Aldefeld et al (US Patent No. 6,813,512), hereinafter Aldefeld ('512).

Prause ('095) substantially teaches all features of the present invention as previously discussed for claim 2. Prause ('095) further teaches that the images may be indexed by breathing cycle, but does not provide a sensor for detecting and recording the breathing phase. In the same field of endeavor, Aldefeld ('512) teaches an ultrasound/X-ray image fusion system including a breathing sensor, in order to index or correct the acquired image data for the patient's breathing phase (col. 2 lines 53-67). It would have been obvious to one of ordinary skill in the art at the time of invention to have modified Prause ('095) to include a breathing sensor, and to characterize breathing phase by the parameter, in view of the teachings of Prause ('095).

Response to Arguments

11. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PARIKHA S. MEHTA whose telephone number is (571)272-3248. The examiner can normally be reached on M-F, 8 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571.272.4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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3737

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